

What is claimed is:

- 1 1. A compressor system for a turbine engine comprising:
2 a disk secured to a rotor, the disk having a leading axial face and a trailing
3 axial face, wherein at least one of the leading face and the trailing face includes an
4 arm projecting axially therefrom and extending annularly about the respective face;
5 and
6 at least one substantially annular seal land having first and second axial ends,
7 wherein at least the first end of the seal land is disposed over the arm and at least a
8 portion of the first end of the seal land is fixed to the arm, wherein the second end of
9 the land is movable between a first position, in which the majority of the seal land is
10 substantially adjacent to the seal arm, and a second position, in which at least the
11 second end of the seal land moves radially outward in response to rotational forces
12 created by the turning of the rotor.
- 1 2. The system of claim 1 wherein the seal land is biased toward the first position.
- 1 3. The system of claim 1 wherein the arm includes a proximal region and a distal
2 region, the first end of the seal arm is fixed in the proximal region of the arm.
- 1 4. The system of claim 1 wherein the first end of the seal land is fixed to the arm
2 by one of fasteners, brazing and welding.
- 1 5. The system of claim 1 wherein the second end of the seal land is flared
2 radially outward.
- 1 6. The system of claim 5 wherein at least a portion of the flared second end of
2 the seal land extends axially beyond the arm.
- 1 7. The system of claim 1 wherein the seal land has a distribution of mass along
2 the axial length of the seal land, wherein the distribution of mass is concentrated at
3 the second end.

1 8. The system of claim 1 wherein the seal land has an associated spring rate,
2 the spring rate being such that the second end of the seal land begins to move from
3 the first position when the rotor is rotating at about 3000 rpm.

1 9. The system of claim 1 wherein the seal land has an associated spring rate,
2 the spring rate being such that the second end of the seal land is substantially in the
3 second position when the rotor is rotating at about 3600 rpm.

1 10. A compressor system for a turbine engine comprising:

2 a first disk secured to a rotor, the first disk having a leading axial face and a
3 trailing axial face, wherein at least the trailing face includes an arm projecting axially
4 therefrom and extending annularly about the trailing face;

5 a second disk secured to the rotor downstream of the first disk, the second
6 disk having a leading axial face and a trailing axial face, wherein at least the leading
7 face includes an arm projecting axially therefrom and extending annularly about the
8 leading face;

9 a substantially annular seal land for each of the arms, each seal land having
10 first and second axial ends, wherein at least the first end of each seal land is
11 disposed over the arm and at least a portion of the first end of the seal land is fixed
12 to the arm;

13 a plurality of stationary vanes extending radially inward toward the rotor and
14 disposed between the first and second disks, a shroud extending over the ends of
15 each of the plurality of vanes, the shroud being near at least the second end of the
16 seal lands,

17 wherein the second end of the seal lands are movable between a first position
18 defining an initial gap between the second end of the seal lands and the shroud and
19 a second position in which at least the second end of the seal lands move radially
20 outward in response to rotational forces of the turning rotor so as to reduce the gap.

1 11. The system of claim 10 wherein the seal land is biased toward the first
2 position.

- 1 12. The system of claim 10 wherein the second end of each seal land is flared
2 radially outward.
- 1 13. The system of claim 10 further including one or more seals strips are attached
2 to the shroud and extend radially away therefrom, wherein the gap is defined
3 between the second end of the seal lands and the ends of the seal strips.
- 1 14. The system of claim 10 wherein the seal land has an associated spring rate,
2 the spring rate being such that the second end of the seal land begins to move from
3 the first position when the rotor is rotating at about 3000 rpm.
- 1 15. The system of claim 10 wherein the seal land has an associated spring rate,
2 the spring rate being such that the second end of the seal land is substantially in the
3 second position when the rotor is rotating at about 3600 rpm.
- 1 16. The system of claim 10 wherein the arm includes a proximal region and a
2 distal region, the first end of the seal land is fixed in the proximal region of the arm.
- 1 17. The system of claim 10 wherein the first end of the seal land is fixed to the
2 arm by one of fasteners, brazing and welding.
- 1 18. The system of claim 10 wherein the seal land has a distribution of mass along
2 the axial length of the seal land, wherein the distribution of mass is concentrated at
3 the second end.
- 1 19. A method for increasing the efficiency of a turbine engine compressor
2 comprising the steps of:
3 (a) providing a turbine engine having a compressor section, the
4 compressor section including:
5 a first disk secured to a rotor;
6 a second disk secured to the rotor downstream of the first disk, each of the
7 disks having a leading axial face and a trailing axial face, wherein at least one
8 of the trailing face of the first disk and the leading face of the second disk

9 includes an arm projecting axially therefrom and extending annularly about
10 the face;

11 a substantially annular seal land having first and second axial ends, wherein
12 at least the first end of the seal land is disposed over the arm and at least a
13 portion of the first end of the seal land is fixed to the arm;

14 a row of radially inwardly extending stationary vanes, the vanes disposed
15 adjacently downstream of the first disk, each of the plurality of vanes
16 terminating at a vane shroud near the seal lands, wherein an initial gap is
17 defined between the second end of the seal lands and the vane shroud;

18 (b) operating the turbine engine such that the compressor rotor turns at
19 about 2300 rpms to about 3600 rpms; and

20 (c) using the rotational forces of the turning rotor to move at least the
21 second end of the seal land radially outward from the first position so as to reduce
22 but not completely close the gap.

1 20. The method of claim 19 wherein the second end of the seal land is fully
2 radially outwardly extended at about 3600 rpms.